COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

D.T.E. 03-121

PREFILED DIRECT TESTIMONY OF

SPIRO VARDAKAS

MARCH 16, 2004

Please state your name, occupation, and business address?

My name is Spiro Vardakas. I am the CEO & CFO with Aegis Energy Services, Inc., 2097 Riverdale Street, West Springfield, MA 01089.

On whose behalf are you testifying in this proceeding?

I am testifying on behalf of Aegis Energy Services, Inc., individually and as a member of the NE DG Coalition.

Please describe your qualifications and experience?

I am an Engineering graduate of Rensselaer Polytechnic Institute with 20 years of electric and gas utility employment ranging from sales engineering to management and management consulting.

In 1985 I established Aegis Energy as a service to conserve energy and reduce cost through cogeneration and other energy conserving services to the medium- size institutional market. I have also participated as an intervener and as a party in utility rate cases and in regards to the misapplication of standby rates to small cogeneration.

Please describe the purpose and conclusion of your testimony?

The purpose is to demonstrate the inappropriateness of NSTAR's standby rate for small machines from both the utilities' position and that of the customer. I conclude that this rate should be rejected and the otherwise applicable tariff should apply..

Please describe the nature of your business?

We develop, install, service, and sometimes own through a shared savings program, small**,** modular, combined heat and power systems (CHP). These systems are typically installed in non-profit, state and federally subsidized nursing and housing facilities, hotels, YMCAs, JCCCs, apartments and condominiums, schools and colleges, etc.

How many DG systems have you installed since 1985 ?

Over the last 19 years, we have installed approximately 85 systems involving 115 machines in businesses throughout Massachusetts, Connecticut, and recently in New York.

Please describe a typical DG system that you have installed or plan to install?

The typical system consists of one or more hi-efficiency reciprocating engine driven generators. We recover heat from the engine and exhaust, and the cogenerator is interconnected electrically and thermally to the facility's related systems. Along with the generated electricity, the facility will use the heat for building space heating, domestic hot water, pool heating, and occasionally for air conditioning via absorption chillers, offsetting fuel normally consumed by conventional heating devices.

Please describe the operating characteristics of the systems you have installed?

These units are sized as a balance between heat and electricity and operate as base load units. The facilities purchase additional supplementary electricity from the utility and produce supplemental heat from their conventional heating devices.

What are the critical factors that lead a customer to install one of your systems?

The same factors used by customers using electric utility conservation programs and funds. It is a discretionary purchase dependant on energy cost savings, return on investment, and conservation. However, there are no electric utility conservation funds available.

What percentage of the installations that you have installed are for customers that are already connected to the utility distribution system?

Ninety-five percent (95%) of our installations are retrofitted into existing facilities. Many are relatively new buildings that had experienced the pressure of high energy operating costs.

Do your customers typically interconnect with NSTAR at the primary distribution level or at the secondary distribution level?

99% of our customers have primary service to a utility owned transformer on their property with secondary service to their switchgear. The generators are electrically connected downstream of the meter and main switch into the customer's electrical

distribution systems. Our systems are applicable on both radial and network distribution systems of any primary and secondary voltage. NSTAR used to permit interconnection on its network according to written policy in the late 1980s and early 90s. NSTAR currently restricts us only to radial distribution systems. Currently we can interconnect on the Con Ed network system.

After you install a system, does the typical customer stay connected with the grid?

These cogenerators are intended for high efficiency conservation. They are primarily "heaters" with electricity as a byproduct. The customer always remains connected to the utility for supplementary power. We primarily use induction-type generators requiring utility power for magnetization, voltage, and frequency control. These machines are inoperable without utility power.

Have you installed any systems within NSTAR's territory?

Yes, since 1990 we have installed twenty-one (21) systems involving twenty-five (25) 60 to75 kW machines.

Are you currently working to install systems within NSTAR's territory?

Yes, several projects are ongoing.

Are you familiar with NSTAR Electric's proposed standby rates?

Yes, we are. They are similar to a Connecticut utility United Illuminating's Backup Rate NUS. We were involved in litigation regarding the imposition of the Back Up rate on one of our projects and there, the application of the standby rate by the utility was rejected by the Connecticut DPUC as inappropriate. We have attached a copy of the case for your consideration. [This NSTAR's Standby rate double-charges the customer in certain circumstances because the supplemental demand reduction credit only applies in circumstances where the DG facility experiences an outage. The Standby rate assumes that the building peak billing demand will occur when the DG system goes down. However, because our DG systems typically comprise a small proportion of the building load, there are times when the peak building demand occurs even while our DG systems are running. Therefore in circumstances when the maximum building demands occur when the DG facility is operational, the customer does not get a supplemental demand reduction. Therefore, the customer pays for both the standby charge and the higher demand charge.

Can you describe the impact such rates will have on your business?

These rates will have a significantly negative impact on our business. Between the additional charges and the complexities of the rate, we believe our prospective customers will be deterred from purchasing a combined heat and power system.

The typical mid-size customer does not understand their current billing. Only some know of demand charges, which are feared because they cannot control their loads, or on and off peak kilowatt-hour charges which usage they cannot do anything about, and other charges that they do not have time to learn about. The customer pays the monthly invoices, often blindly, with some hope that the invoice, which is beyond their control, is correct. These Customers and their accounts payable departments will never be able to understand this standby process. *They are not in the power business.* Thus, the lack of assurance for invoice accuracy that this DG investment now depends upon, will discourage participation in this business.

For assurance of correct billing, every 15 minute demand period of the month must be evaluated for both the cogeneration unit power output and the utility measured demand. Whereas the customer can normally read his own electric meter to verify billing, he would now need 2 sets of 2880 units of data each month to compare for the appropriate billing demand. Skipped meter readings and estimated bills will further complicate this matter.

Costly, complex metering is needed to properly apply this rate to small scale CHP. No estimated costs have been given. Furthermore, we believe NSTAR currently charges for the fifteen-minute demand interval data.

Moreover, these systems are capital intensive since recovered heat must be utilized in the various building thermal processes. The additional charges related to the imposition of the proposed standby rates will deter further investments in CHP systems. The rate of return for the systems must be substantial for a factility to make this discretionary purchase.

In conclusion, the typical small cogeneration customer does not have the resources to deal with these issues and will avoid conservation through cogeneration. As a result, customers will pay more for electricity and energy than they should. The proposed NSTAR rates will deter cost effective DG.

How did you reach that conclusion?

We reached our conclusion based on our extensive business experience in this area. It does not take a P.H.D. in economics to understand that higher prices will reduce demand. Moreover, a number of our customers have expressed concern about the imposition of these ratse. For example, we recently received a letter from the Massachusetts Housing Financing Agency (MHFA), which encourages conservation through cogeneration. A copy of the letter is attached to our testimony.

Do you support NSTAR's proposed standby rates?

We oppose these rates because they are based on a misunderstanding of how DG systems actually operate. First, the rates assume that the distribution company will not collect sufficient revenues to cover the costs of service. *See testimony of Henry LaMontagne at 17.* This is not necessarily true. Our machines must be shut down for oil changes and other maintenance at least once each month. Every 31 days, this automotive-type engine has worked the equivalent of 35,000 miles of vehicle travel. Our customers often incur a demand charge each month based on the full load of the building, paying more than their "fair share". Other outages occur from equipment malfunctions, including occasional building heating system problems.

Secondly, the rates assume that when the DG systems do go down, it will occur at the time of system peak load. However, even accounting for scheduled maintenance and unscheduled outages typical systems annually operate 97% of the time. We further ensure our systems availability by installing heat dissipation units to reject heat during the peak summer periods when thermal loads may be limited.

Other general service customers have comparable loads that are sometimes used, causing an occasional increase in their peak demand billing. Those customers are not required to pay a monthly capacity or standby charge. This standby charge now represents a ratcheted demand charge for DG customers and discourages conservation through cogeneration. The outages of these small machines are the same as adding additional occasional load. The DTE has disallowed ratcheted demand charges in Massachusetts.

Finally, the proposed rates incorrectly assumes all machines will go down on the utility peak day, which occurs on a hot summer day. During all other periods the

transmission and distribution systems have substantial excess capacity. It should be understood DG are not electric air conditioners, all of which are on during hot days causing transmission and distribution peaks.

The higher standby charges in the summer are totally without justification. Summer demand charges were established to appropriately charge electric air conditioning summer loads.

What is your conclusion regarding NSTAR's proposed standby rates?

They should be rejected because they are unreasonable and not supported by facts or data.

Does this conclude your testimony?

Yes.

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